CLAIMS

What is claimed is:

1. A method of determining whether or not a cellular organism is functioning properly, said method comprising:

obtaining a sample from said cellular organism; and

determining a relative ratio of a first nucleic acid and/or gene product thereof of a first endosymbiont cellular organelle in said sample and a second nucleic acid and/or gene product thereof of said cellular organism.

2. The method according to claim 1, wherein said second nucleic acid and/or gene product thereof comprises nuclear nucleic acid and/or gene product thereof detectable in said sample.

3. The method according to claim 2, wherein said first nuclear nucleic acid comprises DNA.

4. The method according to claim 3, wherein said DNA encodes a component of a small nuclear ribonucleoprotein or fragment thereof.

5. The method according to claim 2, wherein said first nuclear nucleic acid comprises RNA.

6. The method according to claim 5, wherein said RNA encodes a component of a small nuclear ribonucleoprotein or fragment thereof.

7. The method according to any one of claims 1 to 6, wherein said first nucleic acid comprises RNA.

8. The method according to claim 1, wherein said determining said relative ratio of said

first nucleic acid and/or gene product thereof comprises determining an amount of said first nucleic acid and/or gene product thereof in relation to an amount of said second nucleic acid and/or gene product thereof detectable in said sample.

9. The method according to claim 8, wherein said first nucleic acid comprises DNA.

10. The method according to claim 8, wherein said first nucleic acid comprises RNA.

11. The method according to any one of claims 1, 2, or 8, wherein said first nucleic acid comprises DNA and said second nucleic acid comprises RNA.

12. The method according to claim 11, wherein said second nucleic acid is derived by transcription from said first nucleic acid.

13. The method according to any one of claims 8 to 12, wherein said first nucleic acid and/or gene product thereof and said second nucleic acid and/or gene product thereof are obtained from the same kind of organelle.

14. The method according to claim 1 or 2, wherein said first nucleic acid comprises RNA and said second nucleic acid comprises DNA.

15. A method of determining the staging of a disease, said method comprising: obtaining a sample from an organism suffering from or at risk of suffering from said disease; and determining a relative ratio of a nucleic acid and/or gene product thereof of an endosymbiont cellular organelle and a second nucleic acid and/or gene product thereof in said sample.

16. A method of determining therapeutic activity, toxic activity and/or possible side-effects of a candidate compound for treatment of malfunctioning of a cellular organism, comprising: introducing a candidate compound to a cellular organism;

obtaining a sample from said cellular organism; and

determining a relative ratio of first nucleic acid and/or gene product thereof of an endosymbiont cellular organelle and a second nucleic acid and/or gene product thereof in said sample.

17. A method of determining therapeutic activity and/or possible side-effects of a medicament, said method comprising:

introducing a medicament to an organism; and

determining a relative ratio of first nucleic acid and/or gene product thereof of an endosymbiont cellular organelle and a second nucleic acid and/or gene product thereof in a sample obtained from said organism.

18. The method according to claim 17, wherein said introducing comprises introducing said medicament for at least three months.

19. The method according to claim 17 or 18, wherein said medicament is used for treatment of a chronic disease.

20. The method according to any one of claims 16 to 19, wherein said introducing a medicament to said organism comprises introducing said medicament to an organism free from side-effects at a first time said medicament is introduced to said organism.

21. The method according to any one of claims 16 to 21, wherein said therapeutic activity comprises a therapeutic activity against an HIV-related disease and/or a tumor-related disease.

22. The method according to any one of claims 16 to 21, wherein said candidate compound or medicament comprises a nucleoside and/or nucleotide analogue.

23. The method according to claim 22, wherein said nucleoside and/or nucleotide analogue comprises fludarabine, mercaptopurine, tioguanine, cytarabine, flurouracil, and/or

gemcyatbine.

24. The method according to any one of claims 16 to 23, wherein said candidate compound or medicament comprises AZT, ddI, ddC, d4T, 3TC and/or tenofofir.

25. The method according to any one of claims 16 to 24, wherein said determining comprises determining said relative ratio prior to said introducing said candidate compound or medicament.

26. The method according to any one of claims 16 or 20 to 25, further comprising determining selective activity of said candidate compound against said cellular organism.

27. The method according to claim 26, further comprising providing an essentially unrelated second organism with said candidate compound.

28. The method according to claim 27, wherein said cellular organism comprises a pathogen and said second organism comprises a host for said pathogen.

29. The method according to claim 28, wherein said cellular organism comprises a weed plant and said second organism comprises a crop plant.

30. The method according to any one of claims 1 to 29, wherein said relative ratio is determined in the same assay.

31. The method according to claim 30, further comprising amplifying said first nucleic acid and/or gene product thereof and said second nucleic acid and/or gene product thereof in the same assay.

32. The method according to claim 30 or 31, wherein said relative ratio is determined

directly by dividing an amount of said first nucleic acid and/or gene product by an amount of said second nucleic acid and/or gene product.

33. The method according to claim 30 or 31, wherein said relative ratio is determined directly by dividing an amount of said second nucleic acid and/or gene product by an amount of said first nucleic acid and/or gene product.

34. The method according to any one of claims 1 to 33, wherein said relative ratio is determined by comparison with a reference curve.

35. The method according to any one of claims 1 to 34, wherein said first nucleic acid and/or gene product thereof and said second nucleic acid and/or gene product thereof are obtained from a peripheral blood monuclear and/or a fibroblast.

36. A diagnostic kit comprising at least one means for performing a method according to any one of claims 1 to 35.

37. The kit of claim 36, further comprising at least one primer or probe selective for the amplification and detection of a nucleic acid related to or derived from endosymbiont cellular organelles.

38. The kit of claim 37, wherein said at least one primer or probe is selected from the group consisting of SEQ ID NO:1, SEQ ID NO:2, SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, SEQ ID NO:7, SEQ ID NO:8, SEQ ID NO:9, SEQ ID NO:10, SEQ ID NO:11, SEQ ID NO:12, SEQ ID NO.13, SEQ ID NO:14, SEQ ID NO:15, SEQ ID NO:16, SEQ ID NO:17, SEQ ID NO:18, SEQ ID NO:19, SEQ ID NO:20, SEQ ID NO:21, SEQ ID NO:22, SEQ ID NO:23, SEQ ID NO:24, SEQ ID NO:25, SEQ ID NO:26, SEQ ID NO:27, SEQ ID NO:28, SEQ ID NO:29, SEQ ID NO:30, SEQ ID NO:31, SEQ ID NO:32, SEQ ID NO:33, SEQ ID NO:34, SEQ ID NO:35, SEQ ID NO:36, SEQ ID NO:37, SEQ ID NO:38, SEQ ID NO:39, SEQ ID NO:40, SEQ ID NO:41, SEQ

ID NO:42, SEQ ID NO:43, SEQ ID NO:44, SEQ ID NO:45 and SEQ ID NO:46.

39. The method according to any one of claims 16 or 20 to 35, further comprising preparing said candidate compound as a medicament, an herbicide, an insecticide, an anti-parasiticum, a cystostatic agent or a cytotoxic agent.

40. A medicament, a herbicide, an insecticide, an anti-parasiticum, a cystostatic agent or a cytotoxic agent obtainable or selectable by the method according to any one of claims 16 or 20 to 35.